LiDAR and Hyperspectral Fusion for Landslide Hazard Detection, Phase I

Completed Technology Project (2006 - 2006)

Project Introduction

HyPerspectives, Inc. and its researchers propose to use remote sensing technologies to answer specific scientific questions for researchers and decision-makers in the natural hazards community. We will employ both current and innovative data fusion techniques to fill key deficiency gaps limiting progress in the natural hazards discipline. By fusing high-resolution hyperspectral imagery and LiDAR (Light Detection And Ranging) data sets from the 2003 Yellowstone Optical and SAR Ground Imaging (YOGI) data collect, we will substantially improve methodologies for natural hazard decision support systems. This imagery fusion is considered innovative because it will further refine the identification and mapping of past events, such as landslides, while also providing quicker and simpler processes for forecasting and mitigating future hazards. Furthermore, the algorithms developed in Phase 2 will satisfy the needs of decision makers by including tools for fault detection, deformation, and geothermal monitoring. The proposed study is directly relevant to the NASA SBIR S7.01 solicitation because we will create automated tools utilizing innovative algorithms to speed up the processing of data that has known relevance to natural hazard planners and researchers. To achieve this, we will build on successful landslide detection techniques and incorporate new algorithms previously developed by HyPerspectives scientists.

Primary U.S. Work Locations and Key Partners
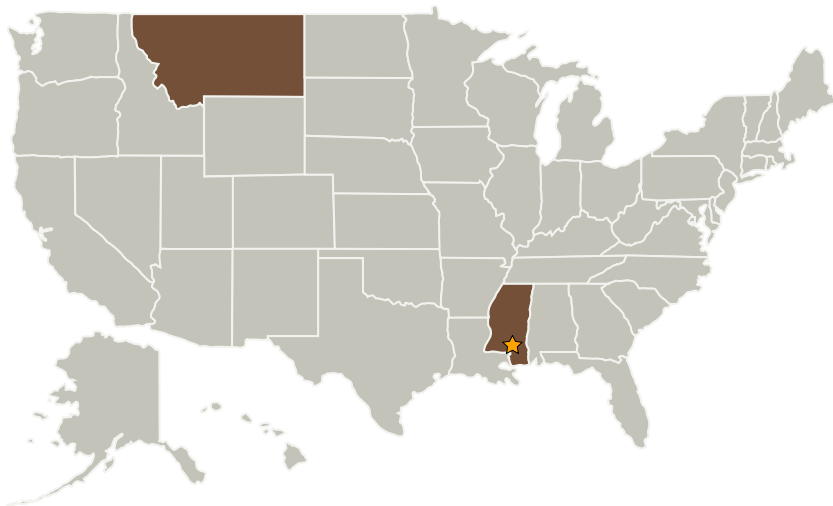
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Organizational Responsibility

Responsible Mission Directorate:

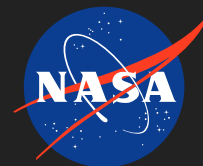Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Stennis Space Center (SSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

TechPort

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Organizations Performing Work	Role	Type	Location
⭐Stennis Space Center(SSC)	Lead Organization	NASA Center	Stennis Space Center, Mississippi
HyPerspectives, Inc.	Supporting Organization	Industry	Bozeman, Montana

Primary U.S. Work Locations	
Mississippi	Montana

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  └ TX11.4 Information Processing
    └ TX11.4.2 Intelligent Data Understanding